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## (54) HEATING AND CONDITIONING SYSTEM FOR BEDS

(71) I, THOMAS PARRY JONES, a British subject, of 10 Westover Road, Wandsworth, London, S.W.18, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed to be particularly described in and by the following statement:—

The present invention relates to a heating and conditioning system for beds in which a cover member is arranged over the reclining surface of a bed to form a compartment through which air is circulated for the purpose of maintaining desired atmospheric conditions particularly of temperature, for the occupant of a bed and with the aim of reducing the need for bedclothes.

An arrangement of this kind has been described in Specification No. 1,311,461, and the present invention comprises an improvement in or modification of the device described and claimed in said application. Said application is particularly concerned with a bed cover assembly for attachment to a bed comprising a dished cover having an end wall at one end and displaceably supported on a frame member for movement to a position overlying at least part of the surface of the bed and in which position the cover provides a compartment surrounding the said at least part of the surface and closed at said one end, and means within the bed cover assembly for circulating air within said compartment by delivering air to an air feed pipe in the compartment, said pipe having an outlet arranged within the compartment.

The improvements according to the present invention provide a more convenient arrangement of the parts and more convenient manipulation especially for the purpose of gaining access to or departing from the bed.

The present invention provides a bed cover assembly for attachment to a bed comprising a dished cover formed in two separate parts, the first part of which is pivotally connected to a support member and the second part of which is adapted to slide over the first part to adopt either a position overlying said first part to enable the user to

move conveniently onto and away from a reclining surface of the bed, or a position disposed in alignment with the first part to form the complete cover member substantially enclosing the reclining surface.

According to a further preferred feature manually operable catch means are provided and are adapted to retain the second said part in a position in line with the first said part and the release of said catch means is adapted to allow the end of the second part nearest the first part to be lifted sufficiently to enable it to ride over the first said part conveniently on suitable wheels or castors.

According to a further preferred feature of the invention air circulating equipment is mounted in an associated compartment formed in the support member, the support member being in the form of a base frame which may comprise the main part of the bed itself or may comprise a member adapted to be placed on to an existing bed frame. In a convenient arrangement the first said part incorporates a preferably vertical distribution pipe resting on a fan outlet fed by a fan system located in the associated compartment of the bed frame, and an air intake opening is provided in the top of said compartment to admit air to the fan from the space enclosed by the cover member.

Thus the air within the zone lying beneath the cover is maintained in constant circulation, air drawn from the foot of the bed at one side being taken through equipment located in the associated compartment which heats the air to a desired temperature or, according to atmospheric conditions, may be arranged to cool the air and if necessary subject it to a conditioning treatment so as to maintain pleasant atmospheric conditions within the main compartment defined by the cover.

One construction of a bed cover assembly according to the present invention is illustrated by way of example on the accompanying drawings in which:

Fig. 1 illustrates a bed cover of the present invention in the closed and ready-for-use position,

Fig. 2 illustrates the bed cover with the two parts brought to an overlapping position.

Fig. 3 illustrates the associated compartment containing the air circulating mechanism located in an associated compartment and the conditioned air distribution pipe,

Fig. 4 is a side view illustrating mechanism for slightly raising one end of one section of the cover to enable the two sections to be moved one over the other, and

Fig. 5 is a detail view illustrating the catch mechanism.

In the embodiment illustrated a horizontal support member which may be in the form of a frame-like structure 6 is provided which may be placed on an existing bed unit or may form part of a specially constructed assembly. The bed unit or the frame 6 is adapted to support a mattress the reclining surface of which is enclosed by a cover member 7. This cover member is formed in two sections or halves 71, 72 of approximately the same length, the section 71 disposed nearest the foot of the bed being hinged to the frame 6 so that it can be raised to an out-of-the-way position the hinges being indicated at 8. The second section 72 is of the same dimensions as the first section 71, both sections having slightly divergent side walls as seen in the downward direction so that the second section when slightly raised may rest upon the first section and can slide smoothly over it. If desired guide wheels or rollers, castors or the like on the second section may be used to permit smooth running over the first section to an out-of-the-way position in which the two sections are substantially completely superimposed as shown in Fig. 2, and from this position the two sections can be pivoted upwardly together to give complete access to the surface of the bed frame, as indicated by Fig. 3.

The part of the horizontal frame structure 6 at the foot of the bed incorporates a box-like compartment 9 beneath the surface supporting the mattress, this being the associated compartment referred to. This compartment houses a fan and air heater 11 and any other air conditioning equipment that may be required. If desired the right-hand section of the compartment 9 may include the fan and heater 11 and the left-hand compartment may include a refrigerator unit for cooling the circulating air when required. The intake to the air cooling, heating and circulating equipment is connected to an opening or grating in the upper surface of the frame structure 6 so that air within the space enclosed by the cover member 7 is allowed to pass to the fan for re-heating and/or conditioning and then for delivery again to the said space. The delivery pipe from the fan may terminate at 12 in the upper wall of

the associated compartment 9 or a short extension pipe may be fitted. A control unit may be mounted at any suitable point of the cover or of the frame 6 to enable the occupant to vary the temperature of the air within the main compartment, and a thermostat control may be included to ensure that whatever atmospheric conditions are selected are correctly maintained within the compartment.

Located within the first section 71 of the cover member 7 is a distribution pipe 13 which extends upwardly when the said section 71 of the cover member 7 is in the lowered position, this pipe having a number of apertures to deliver the air uniformly throughout the space enclosed by the cover member to provide for air circulation at a rate such that no apparent air movement is noticeable by the occupant as a draught or as objectionable noise. It will be noted that when the bed cover 7 is lifted the distribution pipe 13 moves away from the fan outlet 12 or the outlet pipe on the associated compartment.

Convenient manipulation of the second section 72 of the cover member is obtained by the provision of a pivoted handle 14 on the side of the horizontal frame 6 at a suitable point. This handle 14 is supported on a cross shaft carrying a catch member 15 adapted to engage a lug 16 on a cross shaft 17 provided at its centre point with an arm 18 connected through a coupling rod 19 with an arm 21 of a bell crank the other arm of which carries an upwardly movable rod 22 adapted to engage the edge of the cover 72 near the joint between the two sections 71 and 72 when arranged in line one with the other. A spring 23 arranged almost parallel to the rod 19 is adapted on disengagement of the catch 15 from the lug 16 to allow the spring 23 to act upwardly on the rod 22 thereby to lift that edge of the cover section 72 which lies nearest the cover section 71 so that the two sections can then be pushed one over the other to the position shown on Fig. 2 of the drawings.

This provides for lifting of the cover section 72; when the two cover sections are to be brought into line the weight of the cover section 72 presses downwardly on the rod 22 and, with additional manual effort if necessary, compresses the spring 23 and moves the lug 16 past the catch member 15 associated with the handle 14 as it moves to the position shown on Fig. 5.

Thus when it is desired to open the cover 7 the operating handle 14 is depressed and the end of the second section 72 of the cover member 7 adjoining the first section 71 is released and raised a little so that the occupant can readily push the second section over the surface of the first section to the out-of-use position, for example on leaving

the bed. For the reverse action the second section is pulled by hand towards the in-use position forming a complete bed cover and when it reaches the correct final position it runs off the end of the first section and drops into an engaged position.

It will of course be understood that when both sections are in their normal position enclosing the occupant of the bed the side edges of the two sections 71, 72 rest on side members 6 of the frame structure or, in alternative arrangements, on the surface of a mattress supported on said frame structure.

The first and second sections 71, 72 of the cover member 7 may be formed of any suitable material, an inner layer being conveniently of polystyrene while the outer covering may be of the so-called ABS plastics. The edges of the cover may be arranged to seat within a channel member on the bed frame, said channel member being formed of a length of extruded plastics.

#### WHAT I CLAIM IS:—

1. A bed cover assembly for attachment to a bed comprising a dished cover formed in two separate parts, the first part of which is pivotally connected to a support member and the second part of which is adapted to slide over the first part to adopt either a position overlying said first part to enable the user to move conveniently on to and away from a reclining surface of the bed, or a position disposed in alignment with the first part to form the complete cover member substantially enclosing the reclining surface.

2. A bed cover assembly according to claim 1, wherein the support member contains a compartment housing circulating means as well as air heating and/or cooling means for the purpose of maintaining desired atmospheric conditions within the space enclosed by the cover member.

3. A bed cover assembly according to claim 2, wherein the support member forms a base frame adapted to rest on an existing bed frame and the compartment housing the

air circulation, cooling and/or heating means forms part of the base frame.

4. A bed cover assembly according to any of the foregoing claims, wherein spring-operated means are provided adapted to lift that end of the second part of the cover member which lies adjacent to the first part to enable the second part to be slid easily over the first part.

5. A bed cover assembly according to claim 4, wherein the lifting of the said end of the second part is performed by means of upwardly movable spring-influenced rods positioned to engage the lower edge of the second part and adapted to be depressed by said part when the two parts are brought into the aligned positions.

6. A bed cover assembly according to claim 4 and 5, wherein a manually operable lever is provided at a point of the assembly accessible to an occupant of the bed to release when required a catch holding the spring-influenced rods, for the purpose of lifting the second part prior to displacement of said second part on said first part.

7. A bed cover assembly according to claim 6, wherein said lever incorporates a catch face engageable with a lug on a cross shaft coupled to the upwardly movable rods by means of a coupling rod and connecting cranks, a spring being provided to act on said coupling rod when released by the catch means to perform lifting of the upwardly directed rods, which are caused to move downwardly by the weight of the second part of the cover member, thereby to stress the spring when said part is brought into alignment with the first part.

8. A bed incorporating a bed cover assembly according to claim 2, the support member forming the base frame of the bed and the compartment housing the air circulation, cooling and/or heating means forming part of the base frame.

9. A bed cover assembly, substantially as herein described and illustrated.

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COMPLETE SPECIFICATION

2 SHEETS

*This drawing is a reproduction of  
the Original on a reduced scale  
Sheet 1*

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